

REMARKS

Reconsideration of the above-identified patent application, as amended, is respectfully requested. The present amendment is responsive to the Office Action mailed January 31, 2003. A petition for an extension of time in which to respond to the Office Action accompanies this amendment.

By the present amendment, claims 18-22 and 25-31 are pending in the application.

§112 ¶2

Claims 20 and 21 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Office Action objected to the limitation "the inside drilling method" at line 2 of claim 20 as not having an antecedent basis.

In response to this rejection, claim 20 has been amended by the present amendment. The limitation in question has been amended to read --an inside drilling method--.

In view of the present amendment, it is respectfully requested that the rejection of claims 20 and 21 under 35 U.S.C. §112, second paragraph, be withdrawn.

§102/§103

Claims 18, 19 and 24 were rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Japan No. 7-11637.

By the present amendment, claim 24 has been canceled.

This rejection of claims 18 and 19 is respectfully traversed.

Claims 20-22 and 31 were rejected under 35 U.S.C. §102(b) as being anticipated by Japan No. 56-34823.

This rejection of claims 20-22 and 31 is respectfully traversed.

Patentability

Claims 18 and 19

The invention claimed in claim 18 provides a method of construction utilizing a screwed steel pile comprising the steps of:

- 1) rotating a screwed steel pile having a wing at the pile end portion so as to penetrate the screwed steel pile into the ground;
- 2) reversing the screwed steel pile so as to draw it by an appropriate distance when a quantity of penetration of the screwed steel pile is remarkably decreased; and
- 3) rotating the screwed steel pile again so as to penetrate it into the ground.

The invention claimed in claim 19 defines the above steps 2) and 3), that the appropriate distance is at least not less than the pitch of a wing, and penetration is carried out under the condition that a pile head is given a load directed downward.

The technology disclosed in JP-A-7-11637 provides a steel pipe pile to increase the bearing force of a pile in hard ground, by winding up a spiral blade with a specified size by a plurality of rounds and fixing it at the lower end

of a steel pipe and attaching an excavating and thrusting blade on it to form a pile member. In the specification, there is only found descriptions that the steel pipe pile rotates and excavates downwardly without reversing and rotating again, and there is no further description of specific operating conditions. It is submitted that the operating condition described in JP `637 is quite different from the present invention. Furthermore, JP `637 does not disclose or suggest the inventions claimed in claims 18 and 19.

It is therefore submitted that claims 18 and 19 are patentable over Japan No. 7-11637.

Claims 20-22 and 31

The invention claimed in claim 20 provides a method of construction of a screwed steel pile, in which the inside-drilling method is also used, comprising the steps of:

- 1) drilling, rotating and penetrating the screwed steel pile in a soft stratum of ground and discharging drilled soil and sand to a periphery of the pile so that the drilled soil and sand cannot enter the pile, and

- 2) conducting inside-drilling on a hard intermediate stratum or a bearing stratum so that the drilled soil and sand can enter the pile.

The invention claimed in claim 31 provides a similar construction method which is modified from the invention claimed in claim 20.

The invention claimed in claim 21 further provides in addition to the steps of claim 20, that the drilled soil and sand are made to enter the screwed pile by the inside-drilling method when the screwed pile is penetrated into a bearing stratum, and solidification material such as cement, mortar or cement milk is jetted out from an end of the auger so that the jetted solidification material is solidified and integrated with the forward end portion of the screwed pile, and the screwed pile is supported by the bearing stratum of the ground. Further, the invention claimed in claim 22 provides a different construction method regarding inside-drilling and pipe pile excavation.

Regarding the technology disclosed in JP-A-56-34823, there are same similarities to the inventions claimed in claims 20-22 and 31 regarding a construction method. However, there is a significant difference between the technology disclosed in JP-A-56-34823 and the inventions claimed in claims 20-22 and 31, because the pile used in JP-A-56-34823 is made of concrete which is different from the steel pipe pile of the present invention. There was no concept in the prior art to combine a steel pipe pile with an inside-drilling auger at the time the present invention was made. It is submitted that one skilled in the art would not conceive replacing a concrete pile with a steel pipe pile. Therefore, the present invention is not disclosed or suggested by JP-A-56-34823.

It is therefore submitted that claims 20-22 and 31 are patentable over Japan No. 56-34823.

Double Patenting

Claims 18-22 and 24-31 were rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-9 of U.S. Patent No. 6,394,704.

This rejection is respectfully traversed.

U.S. Patent No. 6,394,704 issued upon Application No. 09/423,563 which is the parent of the present application. The present application is a divisional of Application No. 09/423,563.

A restriction requirement was issued in parent Application No. 09/423,563 with the claim Groups being Group I, claims 1-10 and Group II, claims 11-23.

Claims 1-10 were elected with traverse in Application No. 09/423,563 and correspond to claims 1-9 of U.S. Patent No. 6,394,704.

The claims of the present divisional application correspond to non-elected claims 11-23 of parent Application No. 09/423,563.

Because of the restriction requirement, which was traversed, in parent Application No. 09/423,563, it is submitted that an obviousness-type double patenting rejection in this divisional application is not proper.

It is therefore respectfully requested that the obviousness-type double patenting rejection be withdrawn.

Drawings

Form PTO-948, Notice of Draftperson's Patent Drawing Review, was not attached to the Office Action.

Applicants respectfully request to be advised of the status of the drawings in the next communication from the Patent and Trademark Office.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

The following is a marked version of amended claim

20.

--20. (Amended) A method of construction of a screwed steel pile in which [the] an inside-drilling method is also used, comprising the steps of: drilling, rotating and penetrating the screwed steel pile on a soft stratum of a ground and discharging drilled soil and sand to a periphery of the pile so that the drilled soil and sand cannot enter the pile; and conducting inside-drilling on a hard intermediate stratum or a bearing stratum so that the drilled soil and sand can enter the pile.--

CONCLUSION

It is submitted that in view of the present amendment and foregoing remarks, the application is now in condition for allowance. It is therefore respectfully requested that the application, as amended, be allowed and passed to issue.

Respectfully submitted,

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